CLAIMS

1. A method of producing a fuel cell stack (1) comprising multiple stack materials (2, 5A, 5B, 6) stacked in a given order, the production method comprising:

a process for stacking the stack materials (2, 5A, 5B, 6) in the given order in a guide box (40) through intermediation of an adhesive (7) to be solidified through heating; and

a process for integrating the stack materials (5A, 5B, 6) by heating and compressing the stack materials (2, 5A, 5B, 6) stacked in the guide box (40).

2. The production method as defined in Claim 1, wherein the process for stacking comprises a process for holding, between the stack materials (5A, 5B, 6) to surfaces of which the adhesive (7) is applied, the stack material (2) to which no adhesive (7) is applied.

3. The production method as defined in Claim 2, wherein the stack material (2) to which no adhesion (7) is applied comprises a membrane-electrode assembly (2) which causes a power generating reaction in response to gas supply, and wherein the stack materials (5A, 5B, 6) to the surfaces of which the adhesive (7) is applied comprises separators (5A, 5B, 6) having gas paths (10A, 10B) formed thereon, for supplying the gas to the membrane-electrode assembly (2).

4. The production method as defined in Claim 3, further comprising a process for humidifying the membrane-electrode assembly (2).

5. The production method as defined in Claim 3 or 4, further comprising a powder adhesion process for causing electrically charged powder of the adhesive

(7) to adhere to the surfaces of the separators (5A, 5B, 6), which are electrically charged in an opposite polarity.

6. The production method as defined in Claim 5, wherein the powder adhesion process further comprises a process for causing the powder of the adhesive (7) to adhere to the surfaces of the separators (5A, 5B, 6) via a photosensitive drum adsorbing the powder of the adhesive (7) thereon in a given charging pattern.

7. The production method as defined in Claim 3, wherein the separators (5A, 5B, 6) comprise an intermediate separator (6) having the gas paths (10A, 10B) formed on both sides, and end separators (5A, 5B) having the gas paths (10A, 10B) formed only one side thereof, and wherein the process for stacking comprises a process for initially stacking the end separators (5A, 5B) in the guide box (40) and a process for finally stacking the end separators (5A, 5B) in the guide box (40).

8. The production method as defined in Claim 1, wherein the process for stacking further comprises a process for lowering a support position for the stack materials (2, 5A, 5B, 6) stacked in the guide box (40) in correspondence with an increase in thickness of the stack materials (2, 5A, 5B, 6) stacked in the guide box (40).

9. An apparatus for producing a fuel cell stack (1) comprising multiple stack materials (2, 5A, 5B, 6) stacked in a given order, the apparatus comprising:

a guide box (40) that stacks the stack materials (5A, 5B, 6) in the given order through intermediation of an adhesive (7) to be solidified through heating; and

a mechanism (40C, 43) that heats and compresses the stack materials (5A,

5B, 6) stacked in the guide box (40).

10. The producing apparatus as defined in Claim 9, further comprising a stack material supply unit (20) that alternately supplies the stack materials (5A, 5B, 6) to surfaces of which the adhesive (7) is applied and the stack material (2) to a surface of which no adhesive (7) is applied, to the guide box (40).

11. A method of producing a fuel cell having an electrolyte membrane (102) being held between a pair of separators (120), the method comprising:

a separator arrangement process for causing the pair of separators (120) to be opposed to each other with a given gap therebetween; and

an electrolyte membrane intrusion process for causing the electrolyte membrane (105) to enter the gap by applying a conveyance airflow to both sides of the electrolyte membrane (105).

12. The production method as defined in Claim 11, wherein the fuel cell comprises a gas diffusion layer (121) between the separators (120) and the electrolyte membrane (102), the production method further comprising a process for fixing the gas diffusion layer (121) to each separator (120) prior to an execution of the separator arrangement process.

13. The production method as defined in Claim 11, further comprising a process for sucking the electrolyte membrane (105) having entered the gap between the pair of separators (120) together with the conveyance airflow.

14. The production method as defined in Claim 11, further comprising a process for rectifying the conveyance airflow.

15. The production method as defined in Claim 11, wherein the electrolyte membrane intrusion process comprises a process for causing the electrolyte membrane (105) to enter the gap intermittently.

16. The production method as defined in Claim 11, further comprising a process for adjusting the conveyance airflow to a given humidity.

17. The production method as defined in Claim 11, wherein the electrolyte membrane (105) is provided in such a state that the electrolyte membrane (105) is covered with a protective film (106), the production method further comprising a process for separating the protective film (106) from the electrolyte membrane (105) by using an airflow.

18. The production method as defined in Claim 17, wherein the electrolyte membrane (105) is provided as a roll (107), and wherein the electrolyte membrane intrusion process comprises a process for drawing the electrolyte membrane out of the roll (107) while rotating the roll (107).

19. An apparatus for producing a fuel cell having an electrolyte membrane (102) being held between a pair of separators (120), the apparatus comprising:

a separator conveyor (118) for causing the pair of separators (120) to be opposed to each other with a given gap therebetween; and

a pair of conveying nozzles (109A) for causing the electrolyte membrane (105) to enter the gap by applying a conveyance airflow to both sides of the electrolyte membrane (105).